APPARATUS, METHOD, SYSTEM AND EXECUTABLE MODULE
FOR CONFIGURATION AND OPERATION
OF ADAPTIVE INTEGRATED CIRCUITRY HAVING FIXED,
APPLICATION SPECIFIC COMPUTATIONAL ELEMENTS

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Abstract of the Disclosure

The present invention concerns configuration of a new category of
10 integrated circuitry for adaptive or reconfigurable computing. The various embodiments
provide an executable information module for an adaptive computing engine (ACE)
integrated circuit to provide an operating mode. The preferred executable information
modules include configuration information interleaved with operand data, and may also
include routing and power control information. The preferred ACE IC includes a
15 plurality of heterogeneous computational elements coupled to an interconnection
network. The plurality of heterogeneous computational elements include corresponding
computational elements having fixed and differing architectures, such as fixed
architectures for different functions such as memory, addition, multiplication, complex
multiplication, subtraction, configuration, reconfiguration, control, input, output, and
20 field programmability. In response to configuration information, the interconnection
network is operative in real-time to configure and reconfigure the plurality of
heterogeneous computational elements for a plurality of different functional modes,
including linear algorithmic operations, non-linear algorithmic operations, finite state
machine operations, memory operations, and bit-level manipulations.

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